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United States Department of Agriculture,  
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GIFFORD PINCHOT, Forester.

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SILVICAL LEAFLET 7.

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NOBLE FIR.

(*Abies nobilis*, Lind.)

Of all true firs, noble fir is the most valuable. Although it does not form pure stands over large areas, the individual trees attain enormous size and yield good timber for light construction, interior finish, and packing cases. The tree is known in some localities of Washington and Oregon under the name of larch. Of its more important associates it comes closest to Douglas fir in its silvical characteristics, and probably requires similar silvicultural treatment.

RANGE AND OCCURRENCE.

Noble fir grows chiefly on the western slope of the Cascade Mountains, at elevations of from 2,000 to 5,000 feet, from Mount Baker in northern Washington to the Siskiyou Mountains in southern Oregon. It also occurs in the Olympic Mountains and in the coast ranges of western Washington. Though uncommon on the eastern slope of the Cascade Range, it is very abundant on the western slope in the vicinity of the Columbia River in Oregon. It is most abundant and makes its best growth at elevations of from 3,000 to 4,000 feet. The tree prefers cool and sheltered situations and thrives on gentle slopes, flats, and elevated table-land.

CLIMATE.

Judging from its limited altitudinal and regional distribution, noble fir appears to be exacting in its temperature and moisture requirements. Within its range, light, heat, and moisture conditions are, in general, favorable for tree growth. The winters are not severe; the temperature rarely falls below zero and usually remains considerably above. Frosts may occur as late as May and as early as August. Rain and snow storms begin by the end of August. The average annual precipitation varies from less than 20 inches to over 80 inches, yet noble fir does not ordinarily grow where the average precipitation is less than 25 inches a year.

HABIT.

Noble fir has a comparatively small and open crown. It forms a tall, straight, slowly tapering stem, which readily cleans itself of side

branches to a considerable height. In its best development it reaches a diameter of from 6 to 8 feet and a height of from 200 to 250 feet. Ordinarily it is a much smaller tree, averaging in the Cascade National Forest approximately from 3 to 4 feet in diameter and from 135 to 165 feet in height. In dry soils it becomes scrubby and worthless for timber. It has a rapid height growth from the start, and under favorable conditions reaches a height from 8 to 12 feet in the first ten years.

#### ASSOCIATED SPECIES.

Noble fir does not as a rule form pure stands, but occurs most commonly with Douglas fir in the dominant stand over western hemlock. It associates to some extent also with *amabilis* fir and western white pine.

In the vicinity of Mount Rainier the firs arrange themselves altitudinally as follows: Lowland fir, below 2,000 feet; *amabilis* and noble fir, from 2,000 to 6,000 feet; alpine fir, from 5,000 to 7,000 feet.

#### SOIL AND MOISTURE.

Noble fir requires for its best development a comparatively humid climate and a fresh, deep, porous soil. It sometimes grows on rather dry, thin soils, where, however, it is more or less dwarfed.

#### TOLERANCE.

Noble fir is not as tolerant as western hemlock, *amabilis* fir, and lowland fir. In its light requirements it resembles Douglas fir. At no stage in its development can it endure heavy shade. Seedlings are seldom found in the shade of older stands. In competition with other species noble fir is usually enabled to keep its crown in light by its early and vigorous growth in height.

#### REPRODUCTION.

Noble fir produces seeds at infrequent intervals. The seeds are winged and are disseminated chiefly by the wind. Under favorable moisture conditions they will germinate both on mineral soil and on duff, though a seed bed of moist leaf litter is best. Reproduction takes place only in openings such as those caused by fire or lumbering.

#### MANAGEMENT.

Noble fir is adapted to mixed forests as a member of the dominant stand—as, for instance, in the Douglas fir and hemlock type. Since it does not reproduce under shade, clear cutting in groups or strips will be necessary to obtain natural reproduction. The best method of cutting mature stands and restocking the cut-over areas depends on economic conditions and local factors, and must be decided on the ground.